

ABSTRACT

A method and apparatus to test data and set/reset faults in a scan-based integrated circuit in a selected scan-test mode or self-test mode. The scan-based integrated circuit contains multiple scan chains, each scan chain comprising multiple scan cells coupled in series. The method comprises shifting in a plurality of predetermined stimuli during scan-test or pseudo-random stimuli during self-test to the scan-based integrated circuit, using a set/reset enable (SR_EN) signal 383 and a scan enable (SE) signal 382 to capture faults to each scan cell, and shifting out the test responses for comparison or compaction. The apparatus or set/reset controller 375 further comprises using the set/reset enable (SR_EN) signal 383 and scan enable (SE) signal 382 to selectively propagate data faults or set/reset faults to the scan cells in the integrated circuit. Computer-aided design (CAD) methods are then proposed to automatically repair all asynchronous set/reset signals in the scan-based integrated circuit and generate test patterns comprising stimuli and test responses for verifying the correctness of the repaired scan-based integrated circuit during scan-test or self-test.